

# **Exhibit D**



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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/946,536	09/21/2004	Donn Rochette	78803 (120-2 US)	7612
27975	7590	09/22/2009		
ALLEN, DYER, DOPPELT, MILBRATH & GILCHRIST P.A. 1401 CITRUS CENTER 255 SOUTH ORANGE AVENUE P.O. BOX 3791 ORLANDO, FL 32802-3791			EXAMINER	
			RONI, SYED A	
			ART UNIT	PAPER NUMBER
			2194	
			NOTIFICATION DATE	DELIVERY MODE
			09/22/2009	ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

creganoa@addmg.com

**Office Action Summary**

Application No.

10/946,536

Applicant(s)

ROCHETTE ET AL.

Examiner

SYED RONI

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**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --****Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 07/01/2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1 - 20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 - 20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 September 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

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## DETAILED ACTION

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 07/01/2009 has been entered.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1 – 9 and 11 – 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over O'Rourke et al. (US 6,212,574 B1) in further view of Peek (5,481,706).

O'Rourke et al. disclose;

Regarding **claim 1**, (Currently Amended) A **computing system** [i.e., system (col. 1, lines 8 - 11)] for **executing a plurality of software applications** [i.e., software components in the user mode (col. 1, lines 8 - 11)] comprising:

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a) an **operating system** [i.e., operating system (col. 1, lines 10 - 11)] **having** an **operating system kernel** [i.e., kernel mode (col. 1, line 10)] **having OS critical system elements (OSCSEs)** [i.e., software components (col. 1, line 10)], [i.e., drivers or filters (col. 1, line 52), (col. 4, line 52), (see figure 1 and 3)], [i.e., time critical functions (col. 1, lines 49 – 51, lines 58 - 59))] for **running** in **kernel mode** [i.e., kernel mode (col. 1, lines 66 - 67), (col. 2, lines 1 - 2)]; and,

b) **critical system elements (SLCSEs)** [i.e., reader proxy 64...66...68...sound rendering proxy 70 (col. 10, lines 19 - 25), (see figure 3)] stored therein **for use by the plurality of software applications** in **user mode** [i.e., user mode (col. 10, line 26), (see figure 3)], [i.e., software components...user mode (col. 1, lines 9 - 10)] and

i) **wherein some of the SLCSEs** stored in the shared library are **functional replicas of OSCSEs** [i.e., user mode proxy of kernel mode operations (col. 3, line 61)], [i.e., user...for kernel mode filter (col. 6, line 13), (col. 10, line 26), (see figure 3)] and are **accessible** [i.e., interconnecting (col. 5, lines 11 - 14)], [i.e., manipulating...proxies (col. 6, lines 15 - 17)], [i.e., communication with...proxies (col. 10, line 37)] to **some** of the **plurality of software applications** [i.e., user mode applications (col. 2, line 10)], [i.e., controlling agent 44 (col. 5, line 12), (col. 10, line 35), (see figure 3)], [i.e., controlling agents (col. 6, line 15)] and **when** one of the **SLCSEs** is **accessed by** one or more of the **plurality of software applications** **it forms a part** of the one or more of the **plurality of software applications** [i.e., controlling agent 44 (see figure 3)].

O'Rourke et al. do not disclose;

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a shared library having critical system elements (SLCSEs) stored therein for use by the plurality of software applications wherein an instance of a SLCSE provided to one or more of the plurality of software applications from the shared library is run in a context of said one or more of the plurality of software applications without being shared with other of the plurality of software applications and where one or more other of the plurality of software applications running under the operating system have use of a unique instance of a corresponding critical system element for performing essentially the same function.

However, Peek discloses;

a **shared library** [i.e., shared library 14 (col. 4, line 50), (see figure 1)] **having critical system elements (SLCSEs) stored** therein [i.e., data 24 (col. 4, line 53), (see figure 1)] for use **by the plurality of software applications** [i.e., process A 10 (see figure 1)], [i.e., process B 12 (see figure 1)] **wherein an instance of a SLCSE provided to one or more of the plurality of software applications from the shared library is run in a context** of said one or more of the **plurality of software applications** [i.e., Process A – private copy of shared library data 20 (see figure 1)] **without being shared with other of the plurality of software applications** [i.e., Process B – private copy of shared library data 22 (see figure 1)] and **where one or more other of the plurality of software applications** running under the operating system **have use of a unique instance of a corresponding critical system element** for performing essentially the **same function** [i.e., own copy of data (col. 4, lines 52 - 53)].

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At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the user mode proxy drivers for kernel mode drivers of O'Rourke et al. to be stored in a shared data structure such as a shared library as though by Peek to improve the sharing of resources among different applications and use those kernel filters as the library functions in a user mode.

O'Rourke et al. disclose;

Regarding **claim 2**, (Original) A computing system as defined in claim 1, wherein in operation, an **instance of an SLCSE** [i.e., reader proxy 64...66...68...sound rendering proxy 70 (col. 10, lines 19 - 25), (see figure 3)], [i.e., software components....user mode (col. 1, lines 9 - 10)] **run** within the **operating system** [i.e., operating system (col. 1, lines 9 - 10)].

O'Rourke et al. do not disclose;

multiple instances of an SLCSE stored in the shared library run simultaneously within the operating system.

However, Peek discloses;

**multiple instances of an SLCSE stored** in the **shared library run simultaneously** within the operating system [i.e., Process A – private copy...data 20.....Process B – private copy....data 22 (see figure 1)], [i.e., own copy of data (col. 4, lines 50 - 54)].

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the user mode proxy drivers for kernel mode drivers of O'Rourke et al. to include multiple copies of data in a shared library for multiple processes as

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though by Peek to scale the applicability of user mode proxy of kernel mode drivers in variety of applications.

O'Rourke et al. disclose;

Regarding **claim 3**, (Original) A computing system according to claim 1 **wherein OSCSEs corresponding to** and capable of **performing** essentially the **same function as SLCSEs** [i.e., reader proxy filter 64 which acts...reader driver 50.....and sound rendering proxy 70 which acts....sound rendering driver 58 (col. 10, lines 19 - 25), (see figure 3)] **remain** in the **operating system kernel** [i.e., kernel mode filter (col. 10, line 26), (see figure 3)].

O'Rourke et al. disclose;

Regarding **claim 4**, (Previously Presented) A computing system according to claim 1 **wherein** the one or more **SLCSEs** provided to one of the plurality of **software applications** [i.e., application program in user mode (col. 1, lines 46 - 49)], [i.e., user mode (col. 10, line 26), (see figure 3)] having **exclusive use** [i.e., filters needed....applicable to teleconferencing (col. 11, lines 39 - 41)] thereof, **use system calls** [i.e., controlled interfaces or mechanism (col. 1, lines 39 - 41)], [i.e., interfaces (col. 1, lines 46 - 49)] to **access services** [i.e., hardware and other services (col. 1, lines 39 - 41)] in the **operating system kernel** [i.e., operating system (col. 1, lines 39 - 41)], [i.e., driver or filter (col. 1, lines 49 - 51, lines 66 - 67) and (col. 2, lines 1 - 2)].

O'Rourke et al. disclose;

Regarding **claim 5**, (Original) A computing system according to claim 1 wherein the **operating system kernel** comprises a **kernel module** adapted to **serve as** an



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**interface** [i.e., interfaces (col. 1, lines 47 - 50)], [i.e., kernel mode/user mode boundary (col. 3, lines 2 - 3), (see figures 1 - 3)] between a **SLCSE in the context of an application program** [i.e., application program in user mode (col. 1, lines 47 - 50)] and a **device driver** [i.e., driver or filter (col. 1, lines 50 - 52)], [i.e., reader driver 50, effect filter 54 (see figure 3)].

O'Rourke et al. disclose;

Regarding **claim 6**, (Previously Presented) A computing system as defined in claim 1, **wherein** an **SLCSE related to a predetermined function** [i.e., process audio data (col. 11, lines 39 - 41)] is **provided to a first of the plurality of software applications** [i.e., multimedia (col. 11, lines 37 - 41)] for **running first instance of the SLCSE** [i.e., filters (col. 11, lines 39 - 41), (see figure 3)], and **wherein** an **SLCSE for performing essentially a same function** [i.e., applicable (col. 11, lines 37 - 41)] is **provided to a second of the plurality of software applications** [i.e., teleconferencing (col. 11, lines 37 - 41)] for **running a second instance of the SLCSE simultaneously** [i.e., filters (col. 11, lines 39 - 41), (see figure 3)].

O'Rourke et al. disclose;

Regarding **claim 7**, (Original) A computing system according to claim 5 wherein the **kernel module** [i.e., proxy filters (col. 11, lines 1 - 2)] is adapted to **provide** [i.e., send (col. 11, line 1)] a **notification of an event** [i.e., notifications (col. 11, line 2)] to an **SLCSE** running in the **context of an application program** [i.e., controlling agent 44 (col. 11, line 2), (see figure 3)], [i.e., corresponding proxy filter (col. 11, lines 1 - 5)], wherein the **event** is an **asynchronous event** and requires **information** to be **passed**

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to the **SLCSE** from **outside** the **application** [i.e., events would include end of processing,.....a data overrun situation (col. 9, lines 36 - 38)].

O'Rourke et al. disclose;

Regarding **claim 8**, (Previously Presented) A computing system according to claim 7 wherein a **handler** is provided for **notifying** [i.e., notifications (col. 11, line 2)] the **SLCSE in the context of one of the plurality of software applications** through the **use of an up call mechanism** [i.e., user mode proxy of kernel mode operations (col. 3, line 61)], [i.e., user...for kernel mode filter (col. 6, line 13), (col. 10, line 26), (see figure 3)].

O'Rourke et al. disclose;

Regarding **claim 9**, (Original) A computing system according to claim 7 wherein the up call mechanism in operation, **executes instructions** from an **SLCSE resident in user mode space**, in **kernel mode** [i.e., user mode proxy of kernel mode operations (col. 3, line 61)], [i.e., user...for kernel mode filter (col. 6, line 13), (col. 10, line 26), (see figure 3)].

O'Rourke et al. disclose;

Regarding **claim 11**, (Previously Presented) A computing system according to claim 2 wherein **SLCSEs** stored in the shared library are **linked to particular software applications** of the **plurality of software applications** as the particular software applications are loaded such that the particular software applications have a link that provides **unique access** to a **unique instance of a CSE** [i.e., filters needed....applicable to teleconferencing (col. 11, lines 39 - 41)].

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O'Rourke et al. do not disclose;

SLCSEs are stored in the shared library

However, Peek discloses;

a **shared library** [i.e., shared library 14 (col. 4, line 50), (see figure 1)] **having critical system elements (SLCSEs) stored** therein [i.e., data 24 (col. 4, line 53), (see figure 1)]

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the user mode proxy drivers for kernel mode drivers of O'Rourke et al. to be stored in a shared data structure such as a shared library as though by Peek to improve the sharing of resources among different applications and use those kernel filters as the library functions in a user mode.

O'Rourke et al. disclose;

Regarding **claim 12**, (Original) A computing system according to claim 2 wherein the SLCSEs utilize **kernel services** [i.e., software components (col. 1, line 10)], [i.e., drivers or filters (col. 1, line 52), (col. 4, line 52), (see figure 1 and 3)] supplied by the operating system kernel for **device access** [i.e., speaker 62 (see figure 3)], **interrupt delivery** [i.e., notifications (col. 11, line 2), (col. 9, lines 36 - 38)], and **virtual memory mapping** [i.e., filter graph (col. 11, line 8), (col. 11, line 12)], [i.e., disk driver 48 (see figure 2)].

O'Rourke et al. disclose;

Regarding **claim 13**, (Original) A computing system according to claim 1, wherein **SLCSEs** include **services** related to **at least one of**, network protocol

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processes, and the **management of files** [i.e., stream of data...processing functions (col. 2, lines 22 - 23)], [i.e., reading, decompressing and rendering of audio data (see figure 3)].

O'Rourke et al. disclose;

Regarding **claim 14**, (Previously Presented) A computing system according to claim 11 wherein some **SLCSEs** are **modified** [i.e., filters needed to process audio data (col. 11, lines 39 - 40)] for a **particular one** of the plurality of **software applications** [i.e., multimedia (col. 11, line 40)].

O'Rourke et al. disclose;

Regarding **claim 15**, (Original) A computing system according to claim 14 wherein the **SLCSEs** [i.e., reader proxy 64...66...68...sound rendering proxy 70 (col. 10, lines 19 - 25), (see figure 3)] that are **application specific, reside** in **user mode** [i.e., software components in the user mode (col. 1, lines 8 - 10)], while **critical system elements** [i.e., software components (col. 1, line 10)], [i.e., drivers or filters (col. 1, line 52), (col. 4, line 52), (see figure 1 and 3)], which are **platform specific, reside** in the **operating system kernel** [i.e., software components in the kernel mode (col. 1, lines 10 - 11)].

O'Rourke et al. disclose;

Regarding **claim 16**, (Original) A computing system according to claim 5 wherein the **kernel module** is adapted to **enable data exchange** [i.e., interfaces (col. 1, lines 47 - 50)], [i.e., kernel mode/user mode boundary (col. 3, lines 2 - 3), (see figures 1 - 3)] **between** the **SLCSEs in user mode** [i.e., application program in user mode (col. 1,

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lines 47 - 50)] and a **device driver in kernel mode** [i.e., driver or filter (col. 1, lines 50 - 52)], [i.e., reader driver 50, effect filter 54 (see figure 3)], and **wherein the exchange uses mapping of virtual memory** [i.e., filter graph (col. 11, line 8), (col. 11, line 12)] such that **data is transferred both** from the **SLCSEs in user mode** to the **device driver in kernel mode** and from the **device driver in kernel mode** to the **SLCSEs in user mode** [i.e., arrows are going from user mode to kernel mode and from kernel to use mode (see figure 3)].

O'Rourke et al. disclose;

Regarding **claim 17**, (Previously Presented) A computing system according to claim 1 wherein **SLCSEs** form a part of at least some of the plurality of software applications, by **being linked** thereto [i.e., controlling agent 44 (see figure 3)].

O'Rourke et al. disclose;

Regarding **claim 18**, (Original) A computing system according to claim 2 wherein the **SLCSEs** utilize **kernel services** supplied by the operating system kernel for **device access** [i.e., speaker 62 (see figure 3)], **interrupt delivery** [i.e., notifications (col. 11, line 2), (col. 9, lines 36 - 38)], and **virtual memory mapping** [i.e., filter graph (col. 11, line 8), (col. 11, line 12)], [i.e., disk driver 48 (see figure 2)] and **otherwise** execute **without interaction** from the **operating system kernel** [i.e., software components in the kernel mode (col. 1, lines 10 - 11)].

O'Rourke et al. disclose;

Regarding **claim 19**, (Original) A computer system as defined in claim 2 wherein **SLCSEs** are **not copies of OSLCEs** [i.e., user mode proxy of kernel mode operations

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(col. 3, line 61)], [i.e., user...for kernel mode filter (col. 6, line 13), (col. 10, line 26), (see figure 3)].

O'Rourke et al. disclose;

Regarding **claim 20**, (Original) An **operating system** comprising the computing system of claim 2 [i.e., operating system (col. 1, lines 10 - 11)].

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over O'Rourke et al. (US 6,212,574 B1) and Peek (5,481,706) as applied to claim 2 above, and further in view of Desoli et al. (US 2004/0025165 A1).

O'Rourke et al. disclose;

Regarding **claim 10**, (Previously Presented) A computing system according to claim 2, **plurality of software applications** [i.e., software components....mode (col. 1, line 9)] **access** [i.e., interaction (col. 1, lines 8 - 11)] to **operating system services** [i.e., software components.....operating system (col. 1, lines 10 -11)].

O'Rourke et al. and Peek do not disclose;

a function overlay is used to provide one of the plurality of software applications access to operating system services

However, Desoli et al. disclose;

a **function overlay** [i.e., operating system intercept module 304 (page 3, par 0026), (see figure 3)] is used to **provide one** of the **plurality of software applications**

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[i.e., application 102 (page 3, par 0026), (see figure 3)] **access to operating system services** [i.e., operating system 104 (page 3, par 0026), (see figure 3), (page 1, par 0006)].

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the interaction between software components in the user mode and software components in the kernel mode of operating system of O'Rourke et al. and shared library of Peek to include operating system intercept module to intercept calls such system calls from application to an operating system as though by Desoli et al. to manage access of different applications to operating system services.

### ***Response to Arguments***

Applicant's arguments with respect to the pending claims have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SYED RONI whose telephone number is (571)270-7806. The examiner can normally be reached on M - F (8:30 am - 5:00 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hyung Sub Sough (Sam) can be reached on (571) 272 - 6799. The fax

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phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/SYED RONI/  
Examiner, Art Unit 2194

/Hyung S. Sough/  
Supervisory Patent Examiner, Art Unit 2194  
09/17/09



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:	)	Atty. Docket No.:
ROCHETTE ET AL.	)	78803 (120-2 US)
	)	
Serial No. 10/946,536	)	Art Unit: 4113
	)	
Filing Date: SEPTEMBER 21, 2004	)	Examiner:
	)	SYED A. RONI
Confirmation No. 7612	)	
	)	
For: COMPUTING SYSTEM HAVING USER	)	
MODE CRITICAL SYSTEM ELEMENTS	)	
AS SHARED LIBRARIES	)	
	)	

RESPONSE

Mail Stop Amendment  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

Responsive to the Official Action of September 22,  
2009, please consider the remarks set out below.

In re Patent Application of:

**ROCHETTE ET AL.**

Serial No. **10/946,536**

Filed: **09/21/2004**

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**In the Claims:**

1. (Previously Presented) A computing system for executing a plurality of software applications comprising:

a) an operating system having an operating system kernel having OS critical system elements (OSCSEs) for running in kernel mode; and,

b) a shared library having critical system elements (SLCSEs) stored therein for use by the plurality of software applications in user mode and

i) wherein some of the SLCSEs stored in the shared library are functional replicas of OSCSEs and are accessible to some of the plurality of software applications and when one of the SLCSEs is accessed by one or more of the plurality of software applications it forms a part of the one or more of the plurality of software applications, and

ii) wherein an instance of an SLCSE provided to one or more of the plurality of software applications from the shared library is run in a context of said one or more of the plurality of software applications without being shared with other of the plurality of software applications and where one or more other of the plurality of software applications running under the operating system have use of a unique instance of a corresponding critical system element for performing essentially the same function.

2. (Original) A computing system as defined in claim 1, wherein in operation, multiple instances of an SLCSE stored

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**ROCHETTE ET AL.**

Serial No. **10/946,536**

Filed: **09/21/2004**

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in the shared library run simultaneously within the operating system.

3. (Original) A computing system according to claim 1 wherein OSCSEs corresponding to and capable of performing essentially the same function as SLCSEs remain in the operating system kernel.

4. (Previously Presented) A computing system according to claim 1 wherein the one or more SLCSEs provided to one of the plurality of software applications having exclusive use thereof, use system calls to access services in the operating system kernel.

5. (Currently Amended) A computing system according to claim 1 wherein the operating system kernel comprises a kernel module adapted to serve as an interface between ~~a~~ an SLCSE in the context of an application program and a device driver.

6. (Previously Presented) A computing system as defined in claim 1, wherein an SLCSE related to a predetermined function is provided to a first of the plurality of software applications for running first instance of the SLCSE, and wherein an SLCSE for performing essentially a same function is provided to a second of the plurality of software applications for running a second instance of the SLCSE simultaneously.

In re Patent Application of:

**ROCHETTE ET AL.**

Serial No. **10/946,536**

Filed: **09/21/2004**

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7. (Original) A computing system according to claim 5 wherein the kernel module is adapted to provide a notification of an event to an SLCSE running in the context of an application program, wherein the event is an asynchronous event and requires information to be passed to the SLCSE from outside the application.

8. (Previously Presented) A computing system according to claim 7 wherein a handler is provided for notifying the SLCSE in the context of one of the plurality of software applications through the use of an up call mechanism.

9. (Original) A computing system according to claim 7 wherein the up call mechanism in operation, executes instructions from an SLCSE resident in user mode space, in kernel mode.

10. (Previously Presented) A computing system according to claim 2, wherein a function overlay is used to provide one of the plurality of software applications access to operating system services.

11. (Previously Presented) A computing system according to claim 2 wherein SLCSEs stored in the shared library are linked to particular software applications of the plurality of software applications as the particular software applications are loaded such that the particular software applications have a link that provides unique access to a unique instance of a CSE.

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12. (Original) A computing system according to claim 2 wherein the SLCSEs utilize kernel services supplied by the operating system kernel for device access, interrupt delivery, and virtual memory mapping.

13. (Original) A computing system according to claim 1, wherein SLCSEs include services related to at least one of, network protocol processes, and the management of files.

14. (Previously Presented) A computing system according to claim 11 wherein some SLCSEs are modified for a particular one of the plurality of software applications.

15. (Original) A computing system according to claim 14 wherein the SLCSEs that are application specific, reside in user mode, while critical system elements, which are platform specific, reside in the operating system kernel.

16. (Original) A computing system according to claim 5 wherein the kernel module is adapted to enable data exchange between the SLCSEs in user mode and a device driver in kernel mode, and wherein the data exchange uses mapping of virtual memory such that data is transferred both from the SLCSEs in user mode to the device driver in kernel mode and from the device driver in kernel mode to the SLCSEs in user mode.

17. (Previously Presented) A computing system according to claim 1 wherein SLCSEs form a part of at least some

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of the plurality of software applications, by being linked thereto.

18. (Original) A computing system according to claim 2 wherein the SLCSEs utilize kernel services supplied by the operating system kernel for device access, interrupt delivery, and virtual memory mapping and otherwise execute without interaction from the operating system kernel.

19. (Original) A computer system as defined in claim 2 wherein SLCSEs are not copies of OSLCEs.

20. (Original) An operating system comprising the computing system of claim 2.

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#### REMARKS

The Examiner is thanked for the thorough examination of the present application. The Examiner is also thanked for properly withdrawing his prior rejection. Dependent Claim 5 has been amended to correct a minor informality. The patentability of the claims is discussed below.

#### I. The Claimed Invention

The present invention, as recited in independent Claim 1, for example, is directed to a computing system for executing a plurality of software applications. The computing system includes an operating system having an operating system kernel having OS critical system elements (OSCSEs) for running in kernel mode. The computing system also includes a shared library having critical system elements (SLCSEs) stored therein for use by the plurality of software applications in user mode. Some of the SLCSEs stored in the shared library are functional replicas of OSCSEs and are accessible to some of the plurality of software applications. When one of the SLCSEs is accessed by one or more of the plurality of software applications, it forms a part of the one or more of the plurality of software applications. An instance of an SLCSE provided to one or more of the plurality of software applications from the shared library is run in a context of the one or more of the plurality of software applications without being shared with other of the plurality of software applications. One or more other of the plurality of software applications running under the operating system have use of a unique instance of a corresponding critical system element for performing essentially the same function.

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## **II. The Claims Are Patentable**

The Examiner rejected independent Claim 1 over a combination of O'Rourke et al. and Peek. O'Rourke et al. is directed to a system that proxies software components in a kernel mode via software components in a user mode. The Examiner correctly recognized that O'Rourke et al. fails to disclose a shared library having critical system elements (SLCSEs) stored therein for use by the plurality of software applications in user mode and wherein an instance of an SLCSE provided to one or more of the plurality of software applications from the shared library is run in a context of the one or more of the plurality of software applications without being shared with other of the plurality of software applications and where one or more other of the plurality of software applications running under the operating system have use of a unique instance of a corresponding critical system element for performing essentially the same function.

The Examiner turned to Peek for these critical deficiencies. Peek is directed to libraries for use in a multithreaded computer environment that must be thread-safe and that cannot be recoded. Peek discloses identifying the libraries and repackaging them so that library functions are accessible by multiple threads without extensive library modifications.

Applicants submit the Examiner mischaracterized O'Rourke et al. as it fails to disclose some of the SLCSEs stored in the shared library being functional replicas of OSCSEs. The Examiner contended that O'Rourke et al., Col. 3,



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line 61, Col. 6, line 13, and Col. 10, line 26, disclose some of the SLCSEs stored in the shared library are functional replicas of OSCSEs. Nowhere in Col. 3, line 61, Col. 6, line 13, and Col. 10, line 26, does it disclose some of the SLCSEs stored in the shared library being functional replicas of OSCSEs.

Instead, Col. 3, line 61, Col. 6, line 13, and Col. 10, line 26, disclose a user mode proxy of kernel mode operations or kernel mode filters or drivers. More particularly, a software layer is formed on top of a kernel mode graph and allows a controller agent to manipulate a particular kernel mode filter by manipulating a user mode proxy of that particular kernel mode filter. (See O'Rourke et al., Col. 4, lines 5-9).

In other words, O'Rourke et al. discloses providing a generic proxy object that may be used for virtually all kernel mode filters either unchanged or through various extension mechanisms, or more simply providing a user mode proxy filter for a kernel mode filter. (See O'Rourke et al., Col. 6, lines 12-19, and Col. 10, lines 12-33). Indeed, the user mode proxy filter is not a functional replica, but merely acts as an intermediary to the kernel mode filters. Accordingly, independent Claim 1 is patentable for at least this reason.

Applicants further submit that the Examiner further mischaracterized O'Rourke et al. in that it fails to disclose that when one of the SLCSEs is accessed by one or more of the plurality of software applications, it forms a part of the one or more of the plurality of software applications. The Examiner contended that the O'Rourke et al. controlling agent **44** discloses that when one of the SLCSEs is accessed by one or more of the plurality of software applications, it forms a part of

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the one or more of the plurality of software applications. The O'Rourke et al. controlling agent **44** queries "the drivers in order to identify data formats and connection formats in order to interconnect kernel mode filters to create a filter graph." "Controlling agent **44** will also receive notification of important events so that it may exercise control as necessary. Examples of such events would include end of processing, a data starvation situation, a data overrun situation, and so forth." (See O'Rourke et al., Col. 9, lines 28-38; See also O'Rourke et al., Col. 10, lines 33-40, for example). Indeed, the controlling agent **44** fails to disclose that when one of the SLCSEs is accessed by one or more of the plurality of software applications, it forms a part of the one or more of the plurality of software applications. In other words, the SLCSEs literally form part of the application. SLCSEs reside in the same address space as application code, in contrast to a proxy that is exclusive of the application.

Applicants further submit that the Examiner's proposed combination of references is improper in that a person having ordinary skill in the art would not turn to the repackaging of shared libraries of Peek in an attempt to combine with the proxying of software components in a kernel mode via a software component in a user mode. More particularly, O'Rourke discloses that adding proxy filters for kernel mode filters provides several key benefits, for example, "the controlling agent **44** may manipulate and communicate with a particular kernel mode filter simply by manipulating or communicating with its proxy. Thus, user mode proxies of kernel mode filters allow a robust, familiar interface to be presented to a particular controlling

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agent while, simultaneously, allowing the controlling agent to take advantage of all the benefits of a kernel mode streaming architecture." (See O'Rourke et al., Col. 10, lines 33-41). In stark contrast, Peek is concerned with maintaining the integrity of a shared library that is accessible to multiple threads. Indeed, a person having ordinary skill in the art would not turn to the shared library teachings of Peek to combine with the kernel communication teachings of O'Rourke et al.

Additionally, storing some of the SLCSEs in the shared library as functional replicas of OSCSEs, as recited independent Claim 1, for example, is particularly advantageous in multiple operating system environments. This is in contrast to the teaching of both O'Rourke et al. and Peek. Still further, the present invention, as recited in independent Claim 1, for example, advantageously provides the ability to create unique environments for an application to execute within or by the SLCSEs, which is also in contrast to both O'Rourke et al. and Peek.

Still further, the Examiner contends that a person having ordinary skill in the art would modify the user mode drivers of O'Rourke et al. to be stored in a shared data structure such as a shared library as in Peek to improve the sharing of resources among different applications and use those kernel filters as the library functions in a user mode. Applicants submit that Peek fails to teach using a shared library to improve resource sharing, but rather teaches reducing resources required for preventing data corruption using a shared library. (See Peek, Col. 5, line 25 - Col. 6, line 5). Moreover, Applicants submit that it is not even possible to

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place user mode drivers in the libraries, as suggested. Indeed, O'Rourke et al. fails to disclose a shared library, and thus, Applicants submit that any motivation to combine Peek with O'Rourke et al. comes from Applicants' own Specification, paragraphs 4-7, for example. Accordingly, the Examiner's combination of references is improper, and independent Claim 1 is patentable also for this reason.

It is submitted that independent Claim 1 is patentable over the prior art. Its respective dependent claims, which recite yet further distinguishing features, are also patentable over the prior art for at least the reasons set forth above. Notwithstanding the reasons set forth above, further arguments in support of the patentability of the dependent claims are provided below.

### **III. The Dependent Claims Are Patentable**

#### **A. Dependent Claim 2 Is Patentable**

Dependent Claim 2 recites the multiple instances of an SLCSE stored in the shared library run simultaneously within the operating system. Indeed, simultaneously running multiple instances of an SLCSE within the operating system is possible if replicas of OS critical system elements are provided. Neither O'Rourke and Peek disclose this. Allowing simultaneous operation advantageously allows multiple software applications to run at the same time or in parallel without deleterious results that would otherwise occur such as a first instance affecting a second instance or conflicts of that nature. Accordingly, dependent Claim 2 is patentable for these reasons also.

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B. Dependent Claim 3 Is Patentable

Dependent Claim 3 recites the OSCSEs corresponding to and being capable of performing essentially the same function as SLCSEs remain in the operating system kernel. This advantageously provides multiple OS environments within a single OS. This is in contrast to a virtual machine (VM), for example, VmWare, where a VM enables multiple OSs to exist on the same hardware. However, they do it at a cost of duplicating the entire OS, including the kernel. OSCSEs advantageously allow for multiple OS environments to coexist using the same kernel, which increases efficiency.

The Examiner contended that O'Rourke et al. discloses the OSCSEs corresponding to and being capable of performing essentially the same function as SLCSEs remain in the operating system kernel and turned to Col. 10, lines 19-26, to support his contention. Applicants submit that the Examiner mischaracterized O'Rourke et al. as it fails to disclose the OSCSEs corresponding to and being capable of performing essentially the same function as SLCSEs remain in the operating system kernel. Instead, O'Rourke et al. discloses providing a user mode proxy filter for a kernel mode filter. (See O'Rourke et al., Col. 6, lines 12-19, and Col. 10, lines 12-33). Accordingly, dependent Claim 3 is patentable for these reasons also.

C. Dependent Claim 4 Is Patentable

Dependent Claim 4 recites one or more SLCSEs provided to one of the plurality of software applications having

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exclusive use thereof, use system calls to access services in the operating system kernel. The Examiner contended that O'Rourke et al., Col. 11, lines 39-41, disclose the recited exclusive use. Applicants submit that O'Rourke et al., Col. 11, lines 39-41, fails to disclose the recited exclusive use and instead discloses that the filters needed to process audio data for multimedia may also be applicable to teleconferencing.

Indeed, each SLCSE represents a distinct OS environment. Multiple SLCSEs create multiple OS environments. Because each SLCSE uses system calls, they are able to use the same kernel. This advantageously allows multiple OS environments where, for example, multiple web servers may exist each having their own configuration (IP address, etc.), and multiple OS environments are created using a common kernel. Accordingly, dependent Claim 4 is patentable for these reasons also.

#### D. Dependent Claim 5 Is Patentable

Dependent Claim 5 recites the operating system kernel includes a kernel module adapted to serve as an interface between an SLCSE in the context of an application program and a device driver. A kernel module advantageously enables conversions that may be necessary. For example, SLCSE 1 originally used kernel version 1.1 and is placed on a kernel with version 2.2. In this scenario there are conversions to allow the system calls intended for kernel v1.1 to work effectively with kernel v 2.2. Applicants submit that O'Rourke et al. fails to disclose a kernel module adapted to serve as an interface between an SLCSE in the context of an application

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program and a device driver. Instead, O'Rourke et al. discloses kernel mode/user mode transition. Accordingly, dependent Claim 5 is patentable for these reasons also.

E. Dependent Claim 6 Is Patentable

Dependent Claim 6 recites an SLCSE related to a predetermined function is provided to a first of the plurality of software applications for running a first instance of the SLCSE, and an SLCSE for performing essentially a same function is provided to a second of the plurality of software applications for running a second instance of the SLCSE simultaneously. The Examiner contended that O'Rourke et al. Col. 11, lines 37-41, discloses the above-noted recitation. Applicants submit that O'Rourke et al., Col. 11, lines 37-41, fails to disclose the recited exclusive use and instead disclose that individual kernel mode filters will have wide applicability and utility in a variety of applications. For example, many filters needed to process audio data for multimedia may also be applicable to teleconferencing.

Indeed, multiple SLCSEs equate to multiple applications. Applications that may not execute effectively as multiple instances on the same OS can do so within multiple SLCSEs. Accordingly, dependent Claim 6 is patentable for these reasons also.

F. Dependent Claim 7 Is Patentable

Dependent Claim 7 recites the kernel module is adapted to provide a notification of an event to an SLCSE running in the context of an application program, and the event is an



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asynchronous event and requires information to be passed to the SLCSE from outside the application. This is part of the mechanism that enables an SLCSE, and any application that executes using the SLCSE, to execute on a kernel that it was not originally intended to execute with. The ability to send an event to an SLCSE provides increased efficiency and flexibility, and thus it allows an application to execute that would otherwise not be able to execute.

The Examiner contended that O'Rourke et al., Col. 9, lines 36-38, disclose the event being an asynchronous event and requiring information to be passed to the SLCSE from outside the application. Applicants submit that the Examiner mischaracterized O'Rourke et al. Instead, O'Rourke et al., Col. 9, lines 36-38, disclose a controlling agent that receives notification of important events so that it may exercise control as necessary, and examples of such events include end of processing, a data starvation situation, and a data overrun situation. Accordingly, dependent Claim 7 is patentable for these reasons also.

#### G. Dependent Claim 8 Is Patentable

Dependent Claim 8 recites a handler is provided for notifying the SLCSE in the context of one of the plurality of software applications through the use of an up call mechanism. In other words, a mechanism for creating an async event is defined. The Examiner cited to O'Rourke et al., Col. 3, line 61, Col. 6, line 13, and Col. 10, line 26, as disclosing the above-noted recitation. The Examiner's cited portions of O'Rourke et al. merely disclose a user mode proxy for kernel



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mode filter. Accordingly, dependent Claim 8 is patentable for this reason also.

#### H. Dependent Claim 9 Is Patentable

Dependent Claim 9 recites the up call mechanism in operation, executes instructions from an SLCSE resident in user mode space, in kernel mode. This advantageously increases efficiency. Each transition from user mode to kernel is expensive with regard to processing requirements, as a context switch is performed. The claimed mechanism reduces the frequency of that transition.

The Examiner cited to O'Rourke et al., Col. 3, line 61, Col. 6, line 13, and Col. 10, line 26, as disclosing the above-noted recitation. The Examiner's cited portions of O'Rourke et al. merely disclose a user mode proxy for kernel mode filter. Accordingly, dependent Claim 9 is patentable for this reason also.

#### I. Dependent Claim 12 Is Patentable

Dependent Claim 12 recites the SLCSEs utilize kernel services supplied by the operating system kernel for device access, interrupt delivery, and virtual memory mapping. In other words, multiple OS environments execute on a single kernel. In contrast to a VM, this provides a similar benefit, but increases efficiency and reduces complexity.

The Examiner contended that O'Rourke et al., Col. 11, lines 2, 8, and 12, Col. 9, lines 36-38, along with speaker 62, disk driver 48, disclose the SLCSEs utilize kernel services supplied by the operating system kernel for device access,

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interrupt delivery, and virtual memory mapping. Applicants submit that the Examiner mischaracterized O'Rourke et al. in that Col. 11, lines 2, 8, and 12, disclose controlling agent **44** connecting proxy filters. O'Rourke et al., Col. 9, lines 36-38, discloses examples of notification events include end of processing, a data starvation situation, and a data overrun situation. Speaker 62 and disk driver 48 add nothing to the critical deficiencies of O'Rourke et al. Accordingly, dependent Claim 12 is patentable for these reasons also.

#### J. Dependent Claim 13 Is Patentable

Dependent Claim 13 recites SLCSEs include services related to at least one of network protocol processes, and the management of files. In other words, SLCSEs include services related to multiple concurrent network stacks or, multiple file systems.

The Examiner contended that O'Rourke et al., Figure 3 and Col. 2, lines 22-23, disclose the SLCSEs include services related to at least one of network protocol processes, and the management of files. Applicants submit that the Examiner mischaracterized the O'Rourke et al. cited portion as it fails to disclose network protocol processes. Instead, Col. 2, lines 22-23, of O'Rourke et al. disclose processing multimedia by processing a stream of data using a sequence of processing functions. Accordingly, dependent Claim 13 is patentable for this reason also.

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K. Dependent Claim 14 Is Patentable

Dependent Claim 14 recites some SLCSEs are modified for a particular one of the plurality of software applications. An OS environment may be customized to a particular application without the need to customize the application. For example, a specific/customized file system that allows files to be accessed in an archive or compressed format may be provided by a custom SLCSE. In another example, a custom network protocol may be used to enable parallel processing over a custom memory interface.

The Examiner contended that O'Rourke et al., Col. 11, lines 39-40, disclose some SLCSEs are modified for a particular one of the plurality of software applications. Applicants submit that the Examiner mischaracterized O'Rourke et al. as it fails to disclose some SLCSEs are modified for a particular one of the plurality of software applications. Instead, O'Rourke et al., Col. 11, lines 39-40, disclose filters needed to process audio data for multimedia may also be applicable to teleconferencing. Accordingly, dependent Claim 14 is patentable for this reason also.

L. Dependent Claim 15 Is Patentable

Dependent Claim 15 recites the SLCSEs that are application specific, reside in user mode, while critical system elements, which are platform specific, reside in the operating system kernel. The Examiner contended that O'Rourke et al. disclose the above-noted recitation and referred to Col. 1, lines 8-11, to support his contention. O'Rourke et al., Col. 1, lines 8-11, fail to disclose the SLCSEs that are application

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specific, reside in user mode, while critical system elements, which are platform specific, reside in the operating system kernel. Instead, O'Rourke et al., Col. 1, lines 8-11, disclose software components of a computer operating system and software components in a kernel mode of a computer system. Additionally, O'Rourke et al., Col. 1, line 52, discloses a layer of software, typically called a driver, existing on top of computer hardware in a system. Nowhere in the Examiner's cited portions of O'Rourke et al. does it disclose the SLCSEs that are application specific, reside in user mode, while critical system elements, which are platform specific, reside in the operating system kernel.

Indeed, applications may use version 2 of a standard C library from an SLCSE (e.g. OS provides version 5 of the standard C library) while using device drivers for a disk subsystem provided by the kernel. Accordingly, dependent Claim 15 is patentable for this reason also.

#### M. Dependent Claim 16 Is Patentable

Dependent Claim 16 recites the kernel module is adapted to enable data exchange between the SLCSEs in user mode and a device driver in kernel mode, and the data exchange uses mapping of virtual memory such that data is transferred both from the SLCSEs in user mode to the device driver in kernel mode and from the device driver in kernel mode to the SLCSEs in user mode. This advantageously reduces the need for transition from user mode to kernel mode.

The Examiner contended that O'Rourke et al., Col. 1, lines 47-52, and Col. 11, lines 8-12, somehow disclose the

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kernel module is adapted to enable data exchange between the SLCSEs in user mode and a device driver in kernel mode, and the data exchange uses mapping of virtual memory such that data is transferred both from the SLCSEs in user mode to the device driver in kernel mode and from the device driver in kernel mode to the SLCSEs in user mode. Applicants submit that the Examiner mischaracterized the cited portions of O'Rourke et al. Instead, O'Rourke et al., Col. 1, lines 47-51, disclose the operating system providing interfaces through which an application program in user mode may access hardware or other services provided by the operating system, and thus a layer of software typically exists on top of computer hardware in the system. Col. 11, lines 8-11, disclose controlling agent **44** connecting corresponding proxy filter, and corresponding proxy filters handling the details of connecting the individual kernel mode filters into the desired filter graph. Indeed, O'Rourke et al. is silent as to the kernel module being adapted to enable data exchange between the SLCSEs in user mode and a device driver in kernel mode, and the data exchange using mapping of virtual memory such that data is transferred both from the SLCSEs in user mode to the device driver in kernel mode and from the device driver in kernel mode to the SLCSEs in user mode. Accordingly, dependent Claim 16 is patentable for this reason also.

#### N. Dependent Claim 17 Is Patentable

Dependent Claim 17 recites SLCSEs form a part of at least some of the plurality of software applications, by being linked thereto. In other words, applications do not change, and

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they execute on an incompatible OS in the same manner as they would on a compatible OS.

Applicants submit that a person having ordinary skill in the art would not turn to Peek in an attempt to combine with O'Rourke et al. More particularly, Applicants submit that Peek fails to teach using a shared library to improve resource sharing, but rather teaches reducing resources required for preventing data corruption using a shared library. (See Peek, Col. 5, line 25 - Col. 6, line 5). Indeed, a person skilled in the art would not turn to the controlling agent **44** as in O'Rourke et al. in an attempt to arrive at the claimed invention, as recited in dependent Claim 17. O'Rourke et al. discloses using a controlling agent **44** to connect corresponding proxy filters, while Peek teaches reducing resources. In other words, Peek attempt to reduce resources, and O'Rourke et al. adds resources via the controlling agent **44**. Accordingly, dependent Claim 17 is patentable for this reason also.

#### O. Dependent Claim 18 Is Patentable

Dependent Claim 18 recites the SLCSEs utilize kernel services supplied by the operating system kernel for device access, interrupt delivery, and virtual memory mapping and otherwise execute without interaction from the operating system kernel. SLCSEs are not the same as the libraries provided by the OS. Indeed, SLCSEs are specific to the application and are independent of the OS.

The Examiner contended that O'Rourke et al., Col. 11, lines 2, 8, and 12, and Col. 9, lines 36-38, along with speaker 62, disk driver 48, disclose the SLCSEs utilize kernel services

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supplied by the operating system kernel for device access, interrupt delivery, and virtual memory mapping. The Examiner also contended that O'Rourke et al., Col. 1, lines 10-11, disclose executing without interaction from the operating system kernel.

Applicants submit that the Examiner mischaracterized O'Rourke et al. in that Col. 11, lines 2, 8, and 12, disclose controlling agent **44** connecting proxy filters. O'Rourke et al., Col. 9, lines 36-38, discloses examples of notification events include end of processing, a data starvation situation, and a data overrun situation. Speaker 62 and disk driver 48 add nothing to the critical deficiencies of O'Rourke et al. O'Rourke et al., Col. 1, lines 10-11, generally disclose a user mode and a kernel mode of a computer operating system, and fail to supply the above-noted deficiencies. Accordingly, dependent Claim 18 is patentable for this reason also.

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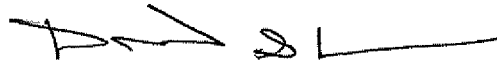
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**III. Conclusion**

In view of the arguments presented above, it is submitted that all of the claims are patentable. Accordingly, a Notice of Allowance is respectfully requested in due course. If the Examiner determines any remaining informalities exist, he is encouraged to contact the undersigned attorney at the telephone number listed below.

Respectfully submitted,



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**REMARKS**

The Examiner is thanked for the thorough examination of the present application. The Examiner and his Supervisor are also thanked for the telephonic interview of June 3, 2009, during which the current claim rejections were discussed and wherein the Examiner agreed that claim amendments along the lines made herein to advance prosecution would define over the prior art. No new matter has been added. The patentability of the claims is discussed below.

**I. The Claimed Invention**

The present invention, as recited in amended independent Claim 1, for example, is directed to a computing system for executing a plurality of software applications. The computing system includes an operating system having an operating system kernel having OS critical system elements (OSCSEs) for running in kernel mode. The computing system also includes a shared library having critical system elements (SLCSEs) stored therein for use by the plurality of software applications in user mode. Some of the SLCSEs stored in the shared library are functional replicas of OSCSEs and are accessible to some of the plurality of software applications. When one of the SLCSEs is accessed by one or more of the plurality of software applications, it forms a part of the one or more of the plurality of software applications. An instance of an SLCSE provided to one or more of the plurality of software applications from the shared library is run in a context of the one or more of the plurality of software applications without being shared with other of the plurality of software

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applications. One or more other of the plurality of software applications running under the operating system have use of a unique instance of a corresponding critical system element for performing essentially the same function.

## **II. The Claims are Patentable**

The Examiner rejected independent Claim 1 over Cabrero et al. Cabrero et al. is directed to a computer system that uses a microkernel to execute two different tasks, for example, operating systems, and uses a common shared library. Rather than each task setting up its own libraries, a global offset table is set up for each task so that the tasks can use common shared libraries.

Independent Claim 1 has been amended to recite that some of the SLCSEs stored in the shared library are functional replicas of OSCSEs. The Examiner agreed that Cabrero et al. fails to disclose the SLCSEs stored in the shared library being functional replicas of OSCSEs. Instead, the Examiner indicated that Cabrero et al. discloses a common shared library 44 that includes addresses to the microkernel common services. (See Cabrero et al. Col. 8, lines 37-43). Nowhere does Cabrero et al. disclose the SLCSEs stored in the shared library being functional replicas of OSCSEs, or in other words, replacements. Accordingly, independent Claim 1 is patentable for at least this reason alone.

Additionally, Applicants submit that Cabrero et al. fails to disclose an instance of an SLCSE provided to one or more of the plurality of software applications from the shared library being run in a context of the one or more of the

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plurality of software applications without being shared with other of the plurality of software applications. The Examiner contended that Figure 1, and Col. 5, lines 37-43, of Cabrero et al., which is reproduced below for reference, disclose the above-noted deficiency.

Dominant personality applications 28 shown in FIG. 1, associated with the UNIX dominant personality example, are UNIX-type applications which would run on top of the UNIX operating system personality 32. The alternate personality applications 39 shown in FIG. 1, are OS/2 applications which run on top of the OS/2 alternate personality operating system 35.

As discussed during the telephonic interview, nowhere in the noted passages or anywhere else in Cabrero et al. does it disclose an instance of an SLCSE provided to one or more of the plurality of software applications from the shared library being run in a context of the one or more of the plurality of software applications without being shared with other of the plurality of software applications. Instead, Cabrero et al. merely discloses tasks 40 and 41, corresponding to the dominant and alternative personality operating systems 38, 39 accessing the common shared library 44 via an abstraction layer 45.

Indeed, as described in the Cabrero et al. Summary of the Invention section, and illustrated in Cabrero et al., Figure 2:

A computer system employing a microkernel executes two different tasks, e.g., operating systems, yet uses common shared libraries. Rather than each task setting up its own libraries, during compile a global offset table is set up for each

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task so that the tasks can use common shared libraries. An abstractions layer is established to allow the tasks to share the global offset table, and thus to use common shared libraries. (Emphasis Added).

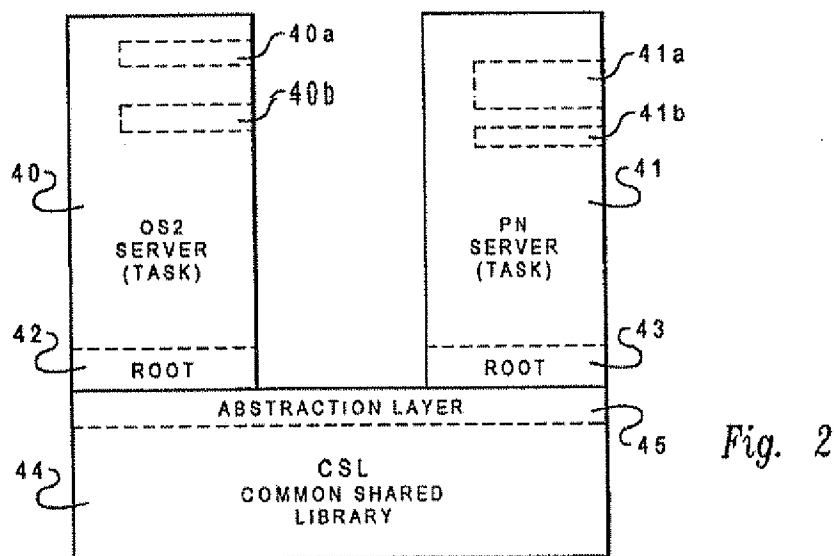


Figure 2 of the Cabrero et al. '075 Patent

Indeed, nowhere in Cabrero et al. does it disclose an instance of an SLCSE provided to one or more of the plurality of software applications from the shared library being run in a context of the one or more of the plurality of software applications without being shared with other of the plurality of software applications.

It is submitted that independent Claim 1 is patentable over the prior art. Its respective dependent claims, which recite yet further distinguishing features, are also patentable over the prior art and require no further discussion herein.

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**III. Conclusion**

In view of the amendments and arguments presented above, it is submitted that all of the claims are patentable. Accordingly, a Notice of Allowance is respectfully requested in due course. If the Examiner determines any remaining informalities exist, he is encouraged to contact the undersigned attorney at the telephone number listed below.

Respectfully submitted,



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